PA1688 Product Application Develop Description

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Name: Palmmicro Communication Co.,LTD

Add. ：Room 0611, bldg.B Tsinghua Tongfang Technology Plaza, No.1 Wangzhuang Road, Haidian District,Beijing

Tel: 01082378008，01082378009

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Author: Aimee

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One Program

All of the licensed user can get a copy of develop package named PalmH323.rar (the file compressed by WINRAR). The user should decompress the package into C:\PalmH323 directory. The develop package

includes two parts. One part include the source files and library files running on the IP Phone or IP Phone Gateway（Today，onlyH.323 protocol、net2phone protocol and TCP/IP arenot opened.）;another part includes the source code of the debug tool named Palmtool running on PC, The source code of Palmtools is in the C:\PalmH323\PalmTool directory。

All IP phones and IP phone Gateways withc base on PA1688 chip used a common source code. The user compile the develop package to make the update file and the fired file and compile the Palmtool, , The user can second develop base on the exist the source code.such as modify UI, modify procotol or add a new procotol. This chaptor introduces how to compile and update the program, hwo to modify the mosic ring tone, IVR voice and WEB page, how to test dsp, how to debug and the other function of the Palmtool.

1.1 Compile Palmtool

The User can download the later executable program form http://www.aredfox.com/cdownloadstech.htm, and decompress the PalmTool.zip. The decompressed files include the PalmTool.exe, executable program and some dynamic linked library. The user also can compile the source code inC:\PalmH323\Palmtool directory to make the executable program. The compiler is Microsoft VC6.0. The compiling step is：

Step 1: RunVC，open C:\PalmH323\Palmtool\palmtool.dsw project file；

Step 2: Add the C:\PalmH323\Inc path to Tools->Options…->Directories of

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directories for include files，and move it first.

Step 3: compile、run。

PalmTool supports the ：Simplified Chinese and English. If the OS is the simplified Chinese, the UI is simplified Chinese and other Windows OS , the UI is English.So there isn,t Chinese edition Palmtool and the English edition Palmtool.

1.2 Compile PalmH323

The compiler of PalmH323 is Keil C51compiler version 7.00. Please install the compiler in the C:\Keil\ dirctor. The test edition Keil can't compile the PalmH323 because the test edition Keil limits the source code size.

1.2.1 The Compiling Step

1. Compile Program

Step 1: Open DOS command window, enter C:\Palmh323\ dirctor。

Step 2: Input setenv (Enter) and set environment variables. This command must be run every time reentering DOS command window.

Step 3: Input mk [hardware] [protocol] [country] [OEM] command (Enter). According to later parameters command mk compiles programs and creates update files and burn files, outputting and checking the compiling result. For example, to compile a standard PA168T phone, Chinese program with protocol H.323, input command mk pa168t h323 cn (enter). For detailed parameters explanation sees next section Compiling Command.

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2. Compile Library

The first and the second steps are the same with Compiling Program.

Step 3: Input mk lib [library name] (Enter). According to later parameters command mk lib compiles programs and creates corresponding library files in c:\palmh323\lib\, outputting and checking the compiling result. For example, to compile library p_util, input command mk lib p_util (Enter).

Note: To modify files in the library, compile the library firstly and then compile the program and PalmTool.

1.2.2 Compile Command

For the convenience of development, we make some BAT files in C:\PalmH323.

- **Cleanall (return)**

Delete files created in compiling process.

- **Setenv (return)**

Set environment variables. This command must be run when enter C:\PalmH323 to prepare for compilation.

- **mk [hardware] [protocol] [country] [OEM] (return)**

Compile programs and create update files and burn files. All parameters are lowercases and comply with definition in C:\PalmH323\inc\version.h. The follows are detailed explanation.

[hardware] —— Hardware definitions of general version config in version.h. XXXX in VER_XXXX is lowercases. Taking example for

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VER_PA168T, [hardware] =pa168t. Default [hardware] =pa168fs.

[protocol] —— Protocol definitions of Protocols in version.h. XXXX in CALL_XXXX is lowercases. Taking example for CALL_H323, [protocol] =h323. Default [protocol] =h323.

[country] —— Country definition of Country in version.h. XXXX in RES_XXXX is lowercases. Taking example for RES_CN, [Country]=cn. According to different Country, the language of user interface (LCD, web page) is different and so are the DTMF tones. Default [language] =cn.

[OEM] —— OEM definitions of OEM defines in version.h. XXXX in OEM_XXXX is lowercases. Taking example for OEM_IPN, [OEM] =ipn. Option OEM is customized for different companies and is not necessary.

After compiling, .hex files are created in C:\PalmH323\ and combined to a phone program outputting to C:\PalmH323\. xxx.bin is a update file and xxx_all.bin is burn file for Program Flash. Compiling result file is make_hex.txt and checking file is p_check.txt.

Example :

mk (return): Compile default Phone PA168FS Chinese program with protocol H323.

mk pa168t h323 (return): Compile Phone PA168T Chinese program with protocol SIP. Default language is Chinese.

mk pa168t h323 cn mediaring (return): Compile Phone PA168T English program with H323 protocol and function of MEDIARING.

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mk pa168t h323 us (return): Compile Phone PA168T English program with protocol H323.

mk pa168t h323 cn huawei3com (return): Compile Phone PA168T Chinese program with H323 protocol and WEB page is huawei3com.

mk pa168t sip de (return): Compile Phone PA168T German program with SIP protocol.

mk pa168t iax2 es (return): Compile Phone PA168T Spanish program with IAX2 protocol.

mk pa168t h323 de ngtel (return): Compile Phone PA168T German program with IAX2 protocol and WEB page is Ngtel.

mk pa168v h323 (return): Compile Phone PA168V Chinese program with H323 protocol.

mk pa168q mgcp fr (return): Compile Phone PA168Q French program with MGCP protocol.

- **mk lib [library name] (return)**

Compile program and create library files in C:\PalmH323\lib\. Library name is lowercase and complies with the definition in C:\PalmH323\make_lib.bat. The definition in make_lib.bat complies with the names in the subdirectory PalmH323. Compiling result make_lib.txt and checking result p_check.txt are created after compiling.

Examples:

mk lib (enter): Compile all libraries. This command is not recommended for

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users. Because it deletes original library files in the directory lib\ and creates new library files. Source codes provided by us exclude H.323, net2phone and TCP/IP, and so, library files of them are not created after compiling, which leads to compiling errors.

mk lib p_util (enter): Compile C:\PalmH323\p_util library program and create a p_util.lib file in C:\PalmH323\lib\.

- **makelibs.bat**

Bat command compiling libraries called by command mk lib.

- **make_bin.bat、make_hex.bat**

Bat compiling command called by command mk.

1.2.3 Analyse the compile result

To avoid compiling errors, we redirect compiling results to a file and checking results to another file p_check.txt. mk library outputs to make_lib.txt and mk program outputs to make_hex.txt. make_hex.txt and make_lib.txt include all the compiling results and p_check.txt includes checking results. Normally, there is no error in p_check.txt and no warning except for ***WARNING 16 and ***WARNING L20. In addition, check C:\Palmh323\main\main.m51, the address of Xdata section can't exceed the 0X69b0.

1.2.4 the compose of the update file

After the compiling, erery pages have own HEX file. According the hardware parameter make command will autoly merge the HEX file to the

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update file and burned file. The merge program is in work space C:\PalmH323\PalmTool\P_MERGE\. We don't give uncecessary details for the merge order of burned file. Please refer to program in file C:/PalmH323/PalmTool/P_MERGE/p_merge.cpp. Below list the merge order of some hard：

1. **Pa168k, Pa168t, Pa168v, Pa168x, Wlink, Iplink and Tg168dv34：use 2M size of Flash，at present flash is MT28F016S5**

   The merge order is "loaddata\\ loaddata.hex" + "g723\\g723.hex" + "ilbc\\ ilbc.hex" + "main\\page4.hex" + "main\\page5.hex" + "g729\\g729.hex" + "main\\page7.hex" + "main\\page8.hex" + "autotest\\autotest.hex" + "settings\\settings.hex" + "userring\\userring.hex" + "page12\\page12.hex" + "autoprov\\autoprov.hex" + "page14\\page14.hex" + "settings\\settings.hex" ;

2. **Pa168s, Pa168p, Pa168q, Tiger, Ywh10, Ywh100, Ywh200, Ywh300, Ywh500, Maxlink, 5111phone, Cosun, Kingtel, Iph_e00_box, Iph_e00_8b_f, Iph_e00_8b_nf, Iph_e00_2g, Ep668 and Yodao：use 2M size of Flash**

   The merge order is " loaddata \\ loaddata.hex" + "g723\\g723.hex" + " ilbc\\ ilbc.hex" + "main\\page4.hex" + "main\\page5.hex" + "g729\\g729.hex" + "main\\page7.hex" + "main\\page8.hex" + "autotest\\autotest.hex" + "settings\\settings.hex" + "userring\\userring.hex" + "page12\\page12.hex" + " autoprov \\ autoprov.hex" + "page14\\page14.hex" + "settings\\settings.hex" ;

3. **Pa168f, Pa168fs, Pinghe, Tg168bv13, Tg168bv19, Iph_e00, Iph_e00_4t, H2001 and Pa168fb：Flash is AM29LV004T**

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The merge order is " loaddata \\ loaddata.hex" + "g723\\g723.hex" + " ilbc\\ ilbc.hex" + "main\\page4.hex" + "main\\page5.hex" + "g729\\g729.hex" + "settings\\settings.hex " ;

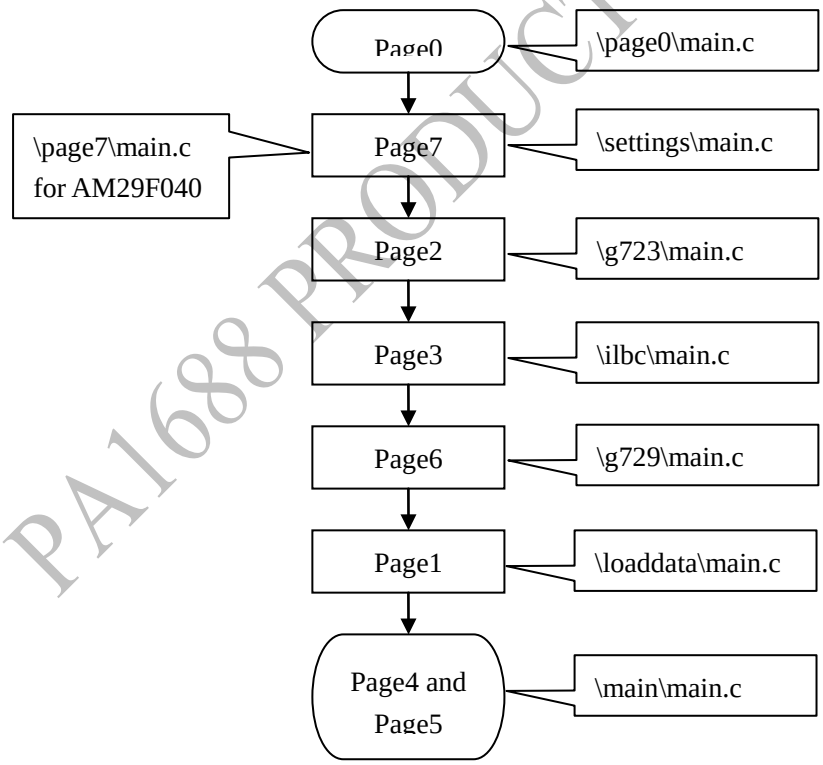
4. Yuxin and Unisen_d：Flash is AM29F040

The merge order is " loaddata \\ loaddata.hex" + "g723\\g723.hex" + " ilbc\\ ilbc.hex" + "main\\page4.hex" + "main\\page5.hex" + "g729\\g729.hex " ;

1.2.5 The Flow of the update file

According the Program Flasht type，the flow of the program is not samed. Now explain the flow of the program。

1. AM29LV004T, MX29LV004T, AM29F040 and AM29LV008B



2. AM29LV008T and MX29LV008B

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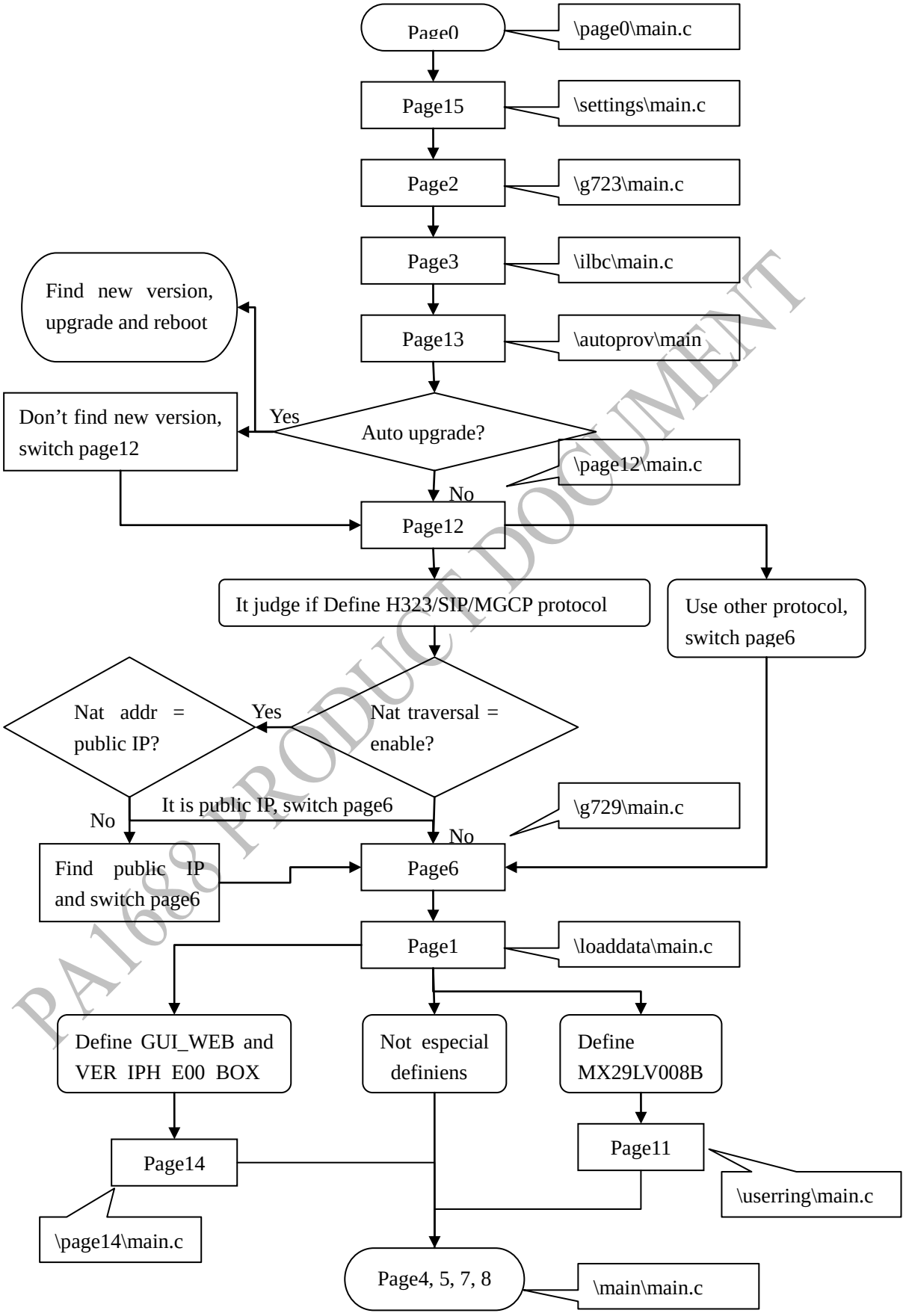

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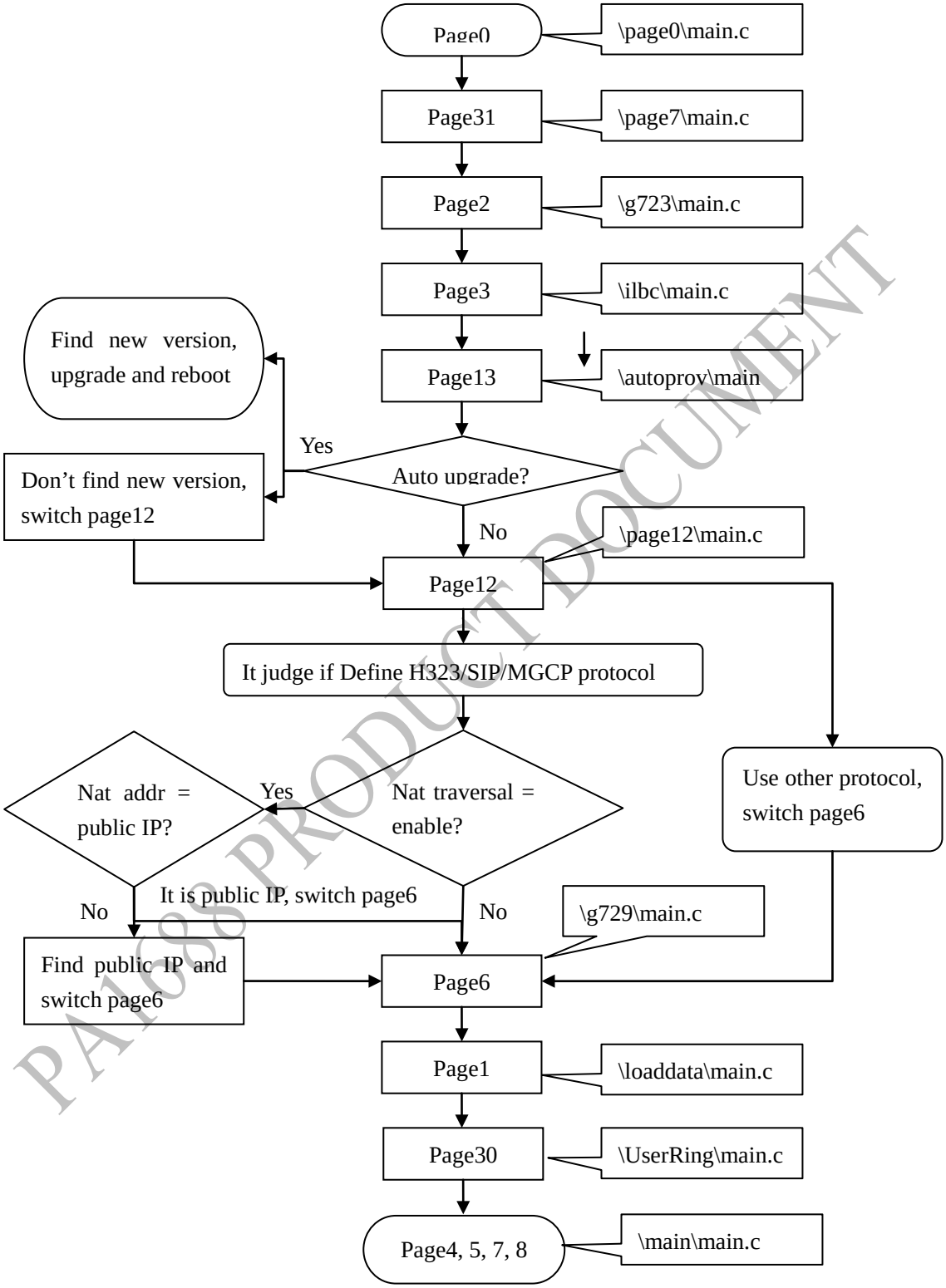
3. MT28F016



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4. LCD Boot Indication

\page0\main.c\: initialize each data, boot indication 0 and 1;

\settings\main.c\: boot indication 2 and 3. There isn't boot indication for AM29F040 and MT28F016;

\g723\maic.c\: load G723 data, boot indication 4 and 5. For AM29F040 and MT28F016, booting indicate 2, 3, 4 and 5;

\ilbc\main.c\: load ILBC data，boot indication 6 and 7;

\g729\main.c\：load G729 data, boot indication 8 and 9;

\loaddata\main.c\：boot indication 10 and 11;

\main\main.c\：boot indication 12, 13, 14 and 15;

5. Page

Page0 — Correspond C:\palmh323\page0\. Initialize each data, and complete each function in page0 state;

Page1 — Correspond C:\palmh323\loaddata\. It loads data of IVR and DTMF. If define GUI_HTTP, it loads normal WEB page. If define H323 portocol, it loads H323 message;

Page2 — Correspond C:\palmh323\g723\. It loads data of G723；

Page3 — Correspond C:\palmh323\ILBC\. It loads data of ILBC and other DSP;

Page4, 5, 7, 8 — Correspond C:\palmh323\main\. This is main part in the program;

Page6 — Correspond C:\palmh323\g729\. It loads data of G729;

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Page7 — For flash AM29LV004T, MX29LV004T and AM29LV008B, it correspond C:\palmh323\settings\ and load phone options. For AM29LV004T and MX29LV004T, it loads still data of PCM ring. For flash AM29F040, it correspond C:\palmh323\page7\ and load phone options;

Page11 — If define MX29LV008B, that it correspond C:\palmh323\ userring and load data of PCM ring;

Page12 — Correspond C:\palmh323\page12\. It find and get public IP;

Page13 — Correspond C:\palmh323\autoprov. It realize function of FTP、TFTPand HTTP auto upgrading;

Page14 — Correspond C:\palmh323\page14\. If define GUI_WEB, it load special Web page; If define VER_IPH_E00_BOX, it load data of IVR;

Page15 — Correspond C:\palmh323\settings\. The page load phone options and PCM ring at phone starting for 1M size of flash. At the same time, it is menu setting page; for 2M size of Flash, the page is the only menu setting page.

Page30 — The page correspond C:\palmh323\userring\ by 2M size of Flash. It loads data of PCM ring;

Page31 — The page correspond C:\palmh323\page7\ by 2M size of Flash. It loads data of phone options;

1.3 update program

1. The update program can fired into IP Phone through the update button

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button of the Palmtool. The update prodedure is　:

Step 1: Input the IP Phone's IP address in the IP Address text

Step 2: Chick the update program button，open update program file, The Palmtool will transmit　the update program to the IP Phone. After the end of transfers，the screen will show "Updating…please wait until the update led stop on and off", at this time begin the fire flash. After IP Phone reboot, the update is successed.

The update program isn't include page0.hex，If you need to update the page0, please use the **update P*Flash*** control。

2.　Onother way is to use the **update P*Flash*** control of Palmtool to update one page by one page. The update page shoud select the ***PFlash type and PFlash Page***. When updating some pages of some program Flash 的某些 page, please read pages firstly, then update. The below table list the specific pages　:

PFlash Type	*PFlash Page*
AM29LV008B	Page0
AM29LV002T	Page3
AM29LV004T/F040	Page7
AM29LV008T	Page15

1.4 Debug

The IP Phone will send degug information to IP broadcast address

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(255.255.255.255:8225) through UDP protocol. The Palmtool can receive these broadcast messages and show these information. By this way, we can check the state of the IP Phone, get the message send by the IP Phone and get the message received by the IP Phone, debug the program.

Chick the begin debug will popup a debug window (*Udp Debug Output).* The user can see the text message and the data message. If there are multi IP Phone, all IP Phone debug message will show in the debug window. If you only see IP Phone debug message, you can input the IP address of the IP Phone in the IP Address of the Palmtool and select the *Debug IP Only*. The debug level of the IP Phone will control the the message. “Debug Level ” includes the five option：

- Not output

Close debug output, when select this iption the PalmTool can’t connect the IP Phone and can’t do any operation, The user can through telnet http or menu mode to change the “Debug Level “.

- Output Message

In debug window, output the state of IP Phone, the key up and down.

Figure 1-4-1

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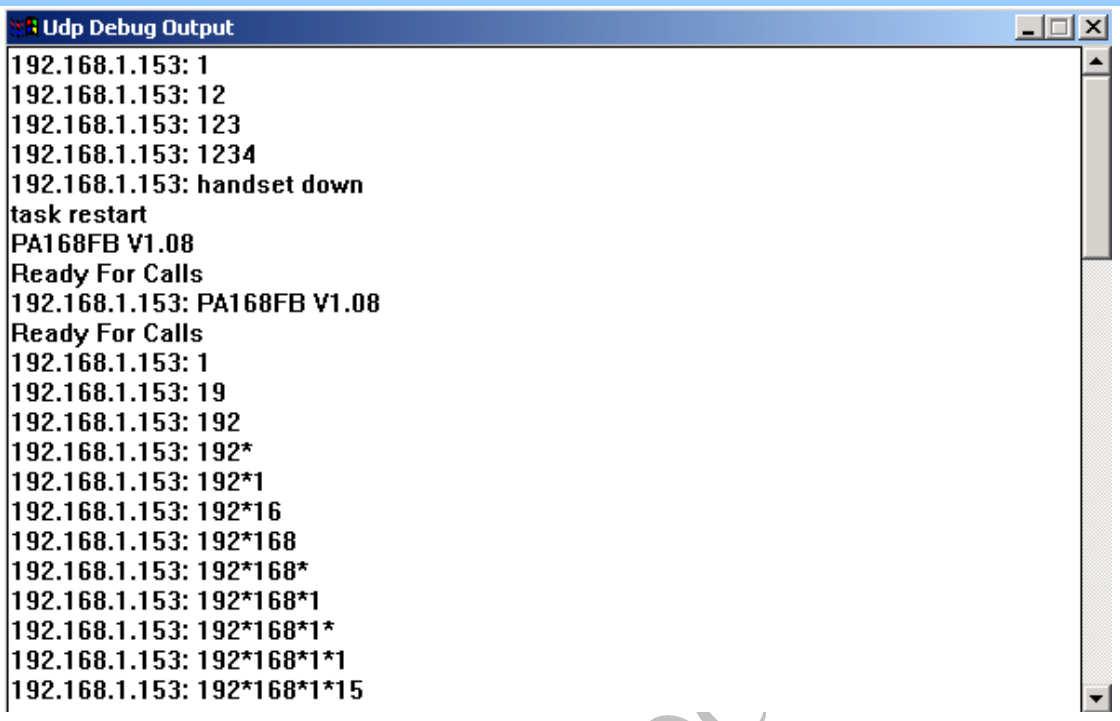

Figure 1-4-1

- Output all message

In the debug window, Output the text debug message and data messages send by phone or received by phone. See Figure1-4-2, red line is the data message. The user can send all debug message to us, we will analyse this message.

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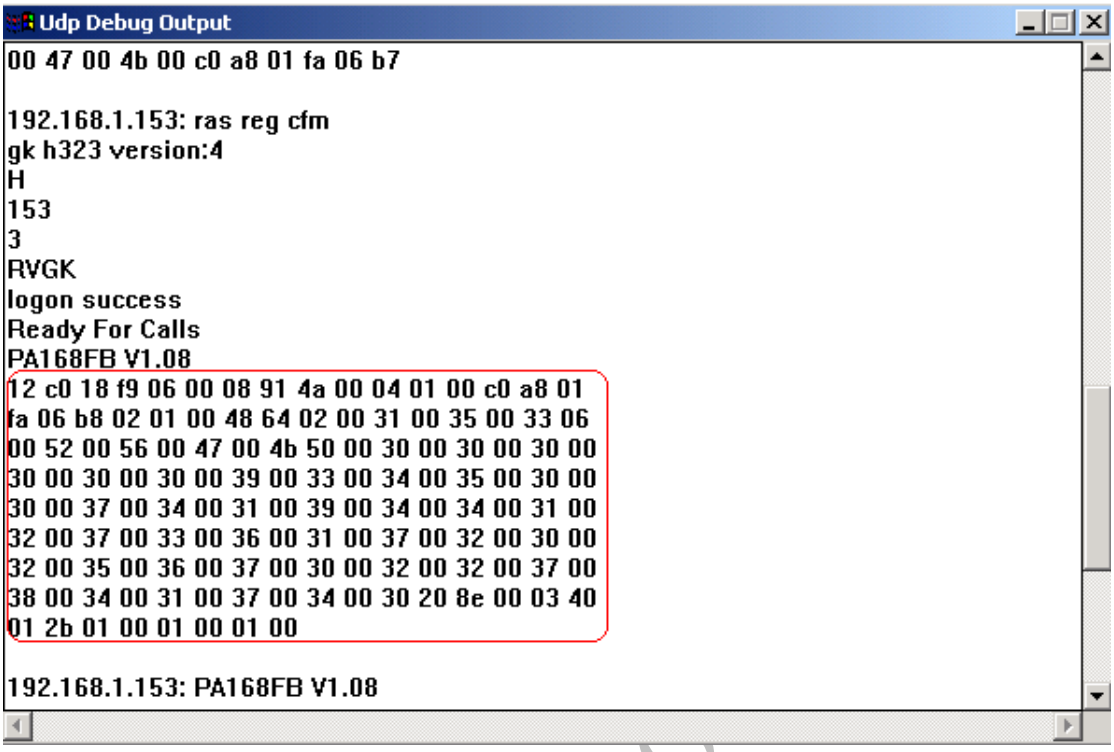

图 1-4-2

- Remote Debug

Only the compute/phone in the same sub networks can receive the debug information, because the debug information are broadcasted, so we can use remote debug if the host compute is in different sub networks. In this case, we store debug information in phone's sdram, then you can export it from phone and translate to text file. For example, hook off-dial- talking-hook on, press "local Ip" button, which finish the debug. To get the debug information:

Step 1: Input ip address in "IP Address". Input the length of information in "Export Sdram Length"

Step 2: Press "Export Sdram" to export debug information and save as a .dat file like test.dat.

Step 3: Press "Transform File", Press "Transform Debug Information

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File…", open the exported file test.dat, and save as a .txt file like convert.txt which include all debug information. If there is some problem with the phone , user can send this file to us, and we will analyse it.

- no check

Don't check the update file version and the hardware type. It should not been used as usually.

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Two Modifying Interface

Phone parameters can be set up by four modes: Web page, PalmTool, Telnet and Menu. Users can modify the display of setup pages practically.

2.1 Modify Web Interface

Modifying Web page includes modifying colors, graphics, layout, hiding parameters and so on. After modification Http page is converted to discriminable binary codes and relevant .h files by using PalmTool.

2.1.1 HTML Source File Explanation

Http source file is in the directory c:\PalmH323\PalmTool\HTTP_DOC\, including standard page (html_common), DLINK page (html_dlink), NGTEL page (html_ngtel), huawei3com page (html_huawei3com) and VIRTTEL page(html_virttel). Each page has many subdirectories according to different languages and has the same number and the same name of files. Take example for standard Chinese page (\html_common\cn\):

- page0.htm

Login page. Enter this page after input phone IP address in the address bar of IE.

NOTE: In huawei3com page and Virttel page, this page is based login page.

- page1.htm

Update successfully page.

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- page2.htm

Password error page. This page pops up when passwords are incorrect.

- page3.htm

Select updating file page. This page pops up after clicking ***Upgrade Fireware*** in setup page settings.htm.

NOTE: In huawei3com page and virttel page, this page is sublogin page.

- page4a.htm、page5b.htm 和 page6c.htm

Address book page is composed of pageheader, inputpart and control.

Phone book title index corresponds to page4a.htm, phone information input corresponds to page5b.htm and control corresponds to page6c.htm.

- settings.htm

Phone parameters setup page includes network setup, voice setup, phone setup, other setup and protocols.

NOTE: In huawei3com page and virttel page, software updating and technical support are included.

When ***debug*** is ***disable***, reading phone parameters with common passwords, Web page displays based phone setup information, namely network setup, voice setup, phone setup and other setup. When ***debug*** is ***disable***, reading phone parameters with super passwords, or ***debug*** is others, Web page display based phone setup and protocol setup. For protocol information, different information displays according to different protocol used by phones.

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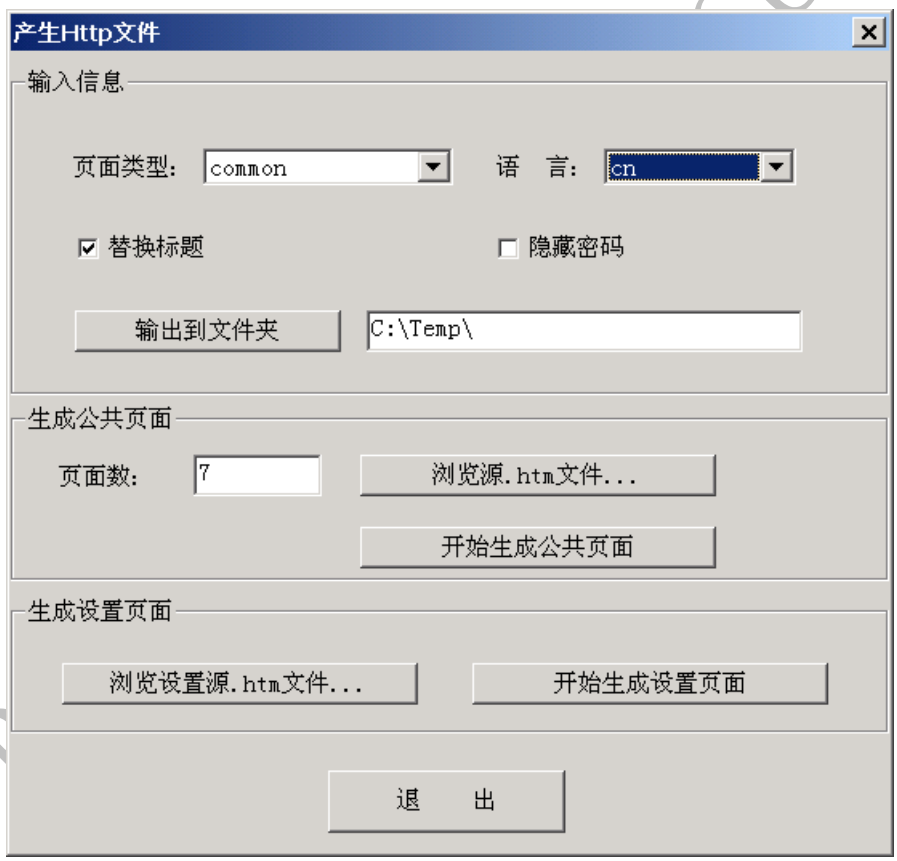
- image.gif

Web page background graphics.

NOTE: This graphics is on the Web page in huawei3com page and virttel page.

2.1.2 Interface of Converting HTTP File

Run PalmTool.exe and click control *Generate HTTP Page*. The following window pops up, which includes Input information, Make public page and Make setup page.



1) Inpute Info

- Web Type: the type of Web page display. Five kinds of display are supplied now.

common: standard Web page display type;

huawei3com：huawei3com Web page display type;

ngtel：ngtel Web page display type;

dlink: dlink Web page display type;

virttel：virttel Web page display type;

- Language: the type of Web page language, including Chinese, English, Germany, France, Italy and Spanish;
- Replace title: Replace title of http page. This item must be selected.
- Hidden Password: “*”or “•” is displayed when passwords are entered in Web page.
- Output Folder: convert output directory

2) Generate Public Page

- Page Number: the number of public pages;
- Browse source .htm files: Open each public page in turn;
- Start Generate Public Page: automatically make .h files according to public pages in output directories.

3) Generate Setting Page

- Browse source .htm files: Select source html file of setup page;
- Start Generate Setting Page: automatically make .h files according to setup pages in output directories.

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2.1.3 Modify Operation

1. Note

You should notice follows when modifing source HTML files:

1) The summation of all .htm and picture files cann't be larger than 64K byte;

2) You can only modify the .htm file in current framework, and can't add any file. The PalmH323 is need to modify if you want to add files;

3) You cann't change all contents in <INPUT…> and <SELECT…>. You can delete the useless items;

4) You cann't change <!--begin=[settings_xxxxx]--> and <!--end--> in setting page;

5) You cann't change page5b.htm;

6) You cann't change all "action=…" in <form method=POST action=/b>

7) You cann't add any hyperlink or picture's which need more process, otherwise you should modify PalmH323's source code;

You can modify the mode of the page, the font, the background color to form your owner style other than above restricting.

You can modify the code in annotate as your need. And then modify the code of Palmtool after finish changing the setting page's http file.

2. Color and Image Modification

Color modification of Web page can be realized by changing the value of color property in page codes. For image modification, take example for

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background image modification:

1) Modifying image.gif

Draw a new image and save it as image.gif, which should not be too large.

2) Coverting image

Run PalmTool.exe, click *Convert File* and select *Binary file to .h coverter...*. Convert image.gif to .h file, such as temp.h.

3) Program

Step One: create web_xxx_image_c.h and web_xxx_image_m.h.

In the subdirectory of c:\PalmH323\inc\web\, create files, replacing xxx with page type. For example, standard page (html_common), path c:\PalmH323\inc\web\cn\, filenames are web_common_image_c.h and web_common_image_m.h.

Step Two: Split temp.h

- Redefine DATA_TITLE_SIZE in temp.h as WEB_IMAGE_MSG_LEN in web_common_image_c.h. Calculate WEB_IMAGE_BLOCK_NUM and define it in web_common_image_c.h. WEB_IMAGE_BLOCK_NUM is WEB_IMAGE_MSG_LEN divided by 256 and rounds the result to the nearest integers towards infinity. For example:

```
#define WEB_IMAGE_BLOCK_NUM        10
#define WEB_IMAGE_MSG_LEN          2490
```

- Redefine WEB_IMAGE_BLOCK_NUM and WEB_IMAGE_MSG_LEN in web_common_image_m.h and then redefine _cData_TITLE

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[DATA_TITLE_SIZE] in temp.h as _cWebImageMsg[WEB_IMAGE_MSG_LEN]. Copy all the data in _cData_TITLE[] to _cWebImageMsg[]. For example:

#define WEB_IMAGE_BLOCK_NUM 10

#define WEB_IMAGE_MSG_LEN 2490

static CCHAR _cWebImageMsg[WEB_IMAGE_MSG_LEN] = {data}

After above operation, recompile the program.

3. Layout Modification

Layout modification is related to http source codes, including character changes and position changes. Attention should be paid to address book pages page4a.htm, page5b.htm and page6c.htm. These 3 files compose one WEB page, which is related to position coordinates. Modification of these files is not recommended. After modifying Http page, convert Http page by PalmTool. More details are described in section 2.1.4. After above operation, recompile the phone program.

4. Parameters Adding and Deleting

Adding and deleting parameters in setup page(settings.htm). Source codes of Http and PalmTool should be modified simultaneously.

8) Modifying Http source code (settins.htm)

In source codes of settings.htm, parts are divided by some comments, which are symbols of converting files. According to these comments modify parameters. Symbols are explained as follows:

<!--begin=[settings_head]-->…<!--end--> : includes header, network

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setup, voice setup and phone setup. These information are displayed and visible to users all the time.

<!--begin=[settings_phoneonly]-->…<!--end--> : phone property information, namely ring type, speakerin and speakerout. This property is invisible for Phone PA168P、PA168Q and PA168V.

<!--begin=[settings_pa168v]-->…<!--end--> : network gate property information, namely dualmode and dualmode prefix, only for Phone PA168V.

<!--begin=[settings_h323]-->…<!--end--> : H323 protocol setup information.

<!--begin=[settings_sip]-->…<!--end--> : SIP protocol setup information.

<!--begin=[settings_macp]-->…<!--end--> : MGCP protocol setup information.

<!--begin=[settings_n2p]-->…<!--end--> : Net2Phone protocol setup information.

<!--begin=[settings_iax2]-->…<!--end--> : IAX2 protocol setup information.

<!--begin=[settings_epn]-->…<!--end--> : EPN protocol setup information.

<!--begin=[settings_wp]--> …<!--end--> : WP protocol setup information.

Web page display protocol setup information according to that used by phones. When ***debug*** is ***disable*** with common passwords, Web page does not display protocol setup.

<!--begin=[settings_tail]--> ……<!--end--> : other phone setup and control. These information display and are visible to users all the time.

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After modification of setup page, continue to modify the program of PalmTool.

9) Modifying PalmTool

Open the project PalmTool in C:\PalmH323\Palmtool\PalmTool.dsw in VC6.0 and modify the function UpdateInput() in C:\PalmH323\Palmtool\HttpDlg.cpp. Users can do it referencing original codes. After modification, recompile PalmTool project and convert Http page by PalmTool. More details is in section 2.1.4.

2.1.4 Generate Http file

Run PalmTool.exe and click ***Generate Http File***. According to different types of Web page, following operation is executed.

1. Fill Input Information

Set up the options, Page type, Language, Replacing title, Hiding passwords and Output to directory.

2. Make Public Page

Input 7, the number of public pages, and then click ***Browse source .htm files…***. htm File, exploring source html files of public pages. We take example for Chinese standard page, in C:\PalmH323\Palmtool\HTTP_DOC\ html_common\cn, click page0 – page1 – page2 – page3 – page4a – page5b – page6c in turns.

And then, click ***Start common page…***, creating .h files corresponding to public pages in output directory. Taking example for Chinese standard page,

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create web_common_cn_i.h and web_common_cn_m.h.

NOTE: This operation is not necessary if not modifying public pages.

3. Make Setting Page

Click ***Browse settings .hrm files…,*** and select corresponding directory in popping window. For example, in C:\PalmH323\Palmtool\HTTP_DOC\ html_common\cn, select settings.htm and click ***Start settings page*** after exploring it. Corresponding .h files are created in output directory. Setup page has many .h files and each comments part corresponds to 2 .h files.

4. Overwrite Files

Copy all .h files to the corresponding sub directory of C:\PalmH323\Inc\web\.

Above operation finished, Build PalmH323, generate new program, updating phone.

2.2 Modify Language

1. Translating Web Page

Select a Web page type and translate the display language in source codes. Taking example for standard Web page, translate files in Palmh323\PalmTool\HTTP_DOC\html_common\cn\, including page0.htm、page1.htm、page2.htm、page3.htm、page4a.htm、page5b.htm、page6c.htm and settings.htm.

2. Translate LCD Display

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According to standard English LCD display, translate strings in Palmh323\p_apps\lcd_en.c and save them in a new file.

3. Recording IVR Voice

Produce IVR voice and record a new language voice file referring to section 3.2.

After completing above operations, send the translations to support@aredfox.com, a new additional language enclosed.

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Three Modification Voice

3.1 Modify the Phone Ring Voice

The Phone which uses AM29LV004T、AM29LV008T、AM29LV800T and MT28F016 Flash can use the Music as ring voice, except gateway. The user can download ring from www.aredfox.com/cdownlodasring.htm or create it self. The procedure is first record a 8K sample 16 bit pcm music, then compress it with G723 and G.729 codec, last merge the two compressed file into a file,. This file is ring file which can download into the phone. Now list detailed procedure.

3.1.1 Create music ring

Step 1: Record ring voice

We recommend the Cool Edit tool.

1) Run Cool Edit , click menu ***File*** , select ***New...***, Set in the popup window as follow. Figure 3-1-1

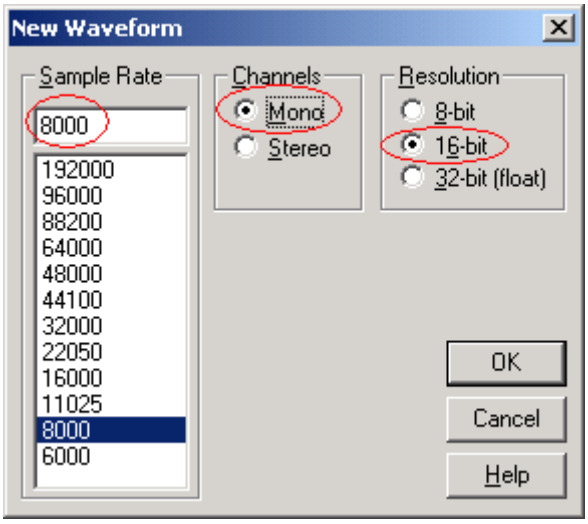

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Figure 3-1-1

2) Play a music , click“ ”record button. After recording, tail the ring and save a .pcm file, as bells.pcm. Now, the ring length must be between 7.680~7.689 second.

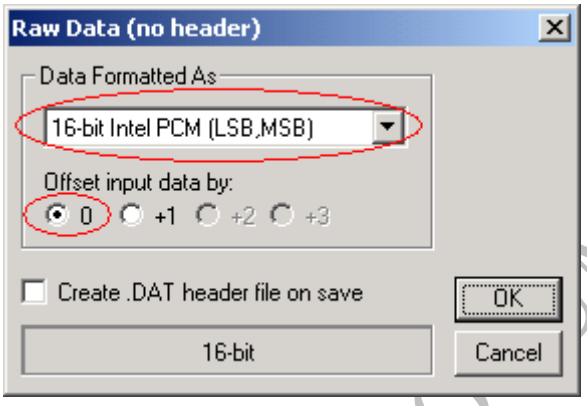

Figure 3-1-2

Step 2: Encode

The musical ring voide include G723 and G729 condec. After recording, encode with G723 and G729.

1) G723 encode :

- Run PalmTool.exe , select *ITU-T G.723.1* in *audio encode setting.* Don't check *g.729 and g723 with VAD* , Figure 3-1-3

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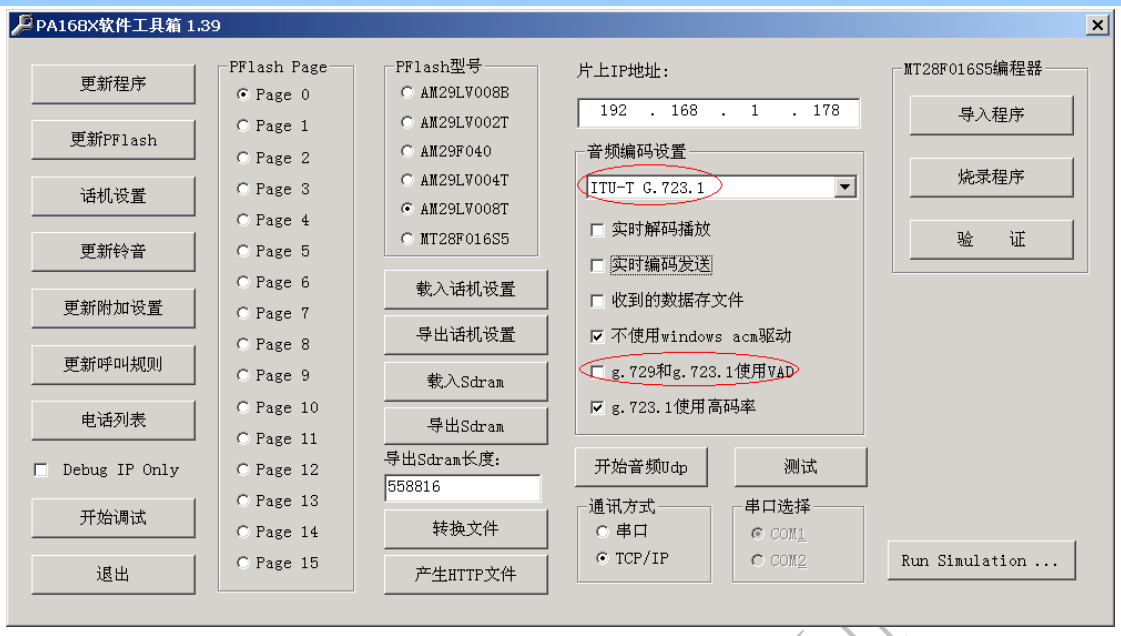

Figure 3-1-3

- Click ***Transform File,*** select ***audio file encode....*** Open file bells.pcm in popup window, and save as .dat file, such as bells_3.dat.

2) G729 encode：

- Same as G723，and select ***ITU-T G.729.1 with Annex A&B*** in ***audio file setting.***

- Click ***Transform File,*** select ***audio file encode....*** Open file bells.pcm in popup window, and save as .dat file, such as bells_9.dat

Step 3: Merge ring file

Run copy /B bells_3.dat+bells_9.dat bells.dat，and generate bells.dat。

3.1.2 Update Ring

Step 1: Update ring

Input the ip address which phone you want to update in “IP Address”, click ***Update Ring***, select the right file “bells, date”, and open it.

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Step 2: Parameter Setting

Settings as *user define* in *Ring Type*.

3.2 Create IVR Voice

The IVR is the voice sending out after you pressed the function button. They are composed of some basic voice files, such as “Local IP” is composed “Local” and “IP”. To create IVR voice files, we should recode all raw pcm files, and copy them to a directory, then using Palmtool-> *Transform Files->Batch IVR...* to convert raw pcm date to header files. The 24 head files which used by the program as follow:

.h file name	.pcm file name	New words
0.H~10.H	0.pcm~10.pcm	One, two, three, four, five, six, seven, eight, nine, ten
BLANK.H	blank.pcm	No voice, silence
DOT.H	dot.pcm	dot
GATEWAY.H	gateway.pcm	gateway
HUNDRED.H	hundred.pcm	hundred
IP.H	ip.pcm	IP
LOCAL.H	local.pcm	local
MASK.H	mask.pcm	mask
NUMBER.H	number.pcm	number
ONE.H	one.pcm	one

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SERVICE.H	service.cpm	service
SIGNAL.H	signal.pcm	
SUBNET.H	subnet.pcm	subnet
TWO.H	two.pcm	two

Note: You can't modify the default file name and path what predefined by the program. If you want do it, modify the program first.

The example for creating Russian IVR:

Step 1: Recording pcm raw date file

Record all pcm files, 8k bit rate, mono, 16bit precision. The voice length should less than 640 Ms. and save the .pcm file to C:\PalmH323\data\p_voice\ru_m\.

Step 2: Modify Palmtool code

Add code "Pcm2H_All(m_strSourceDir + _T("data\\ivr_ru\\"), m_strSourceDir + _T("data\\p_voice\\ru_m\\"));" to function OnBatchWork() in C:\PalmH323\Pamtool\ConvertFileDlg.cpp. Then build and run Palmtool.

Step 3: Click Palmtool->*Translate File*->*Batch IVR...*, convert .pcm files to .h files. The files create in C:\PalmH323\data\IVR_RU\.

Step 4: Rebuild the Russian updting file, updating phone, restart the phone, press any key and you can hear the Russian voice.

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Four Other Functions

4.1 DSP Testing

We test G.723 and G.729's encoding and decoding at different system speeds to check the rationality of PCB layout.

Operate as follow:

1. Testing data

We need import and verify two standard testing vector file during testing.

The two standard import files are g723in.dat and g729in.dat, and the two golden results are g723out.dat and g729out.dat.

- G.723 standard test vector file: g723in.dat
- G.723 golden results file: g723out.dat
- G.729 standard test vector file: g729in.dat
- G.729 golden results file: g729out.dat

2. Test method

- G.723 Codec Test

First: Run Palmtool.ext, enter your tested phone's ip address in ***Client IP Address***; Select ***ITU-T G.723.1*** in ***Audio Encode Setting***, set "**558816**" in ***Export SDRAM Length***.As figure 4-1-1.

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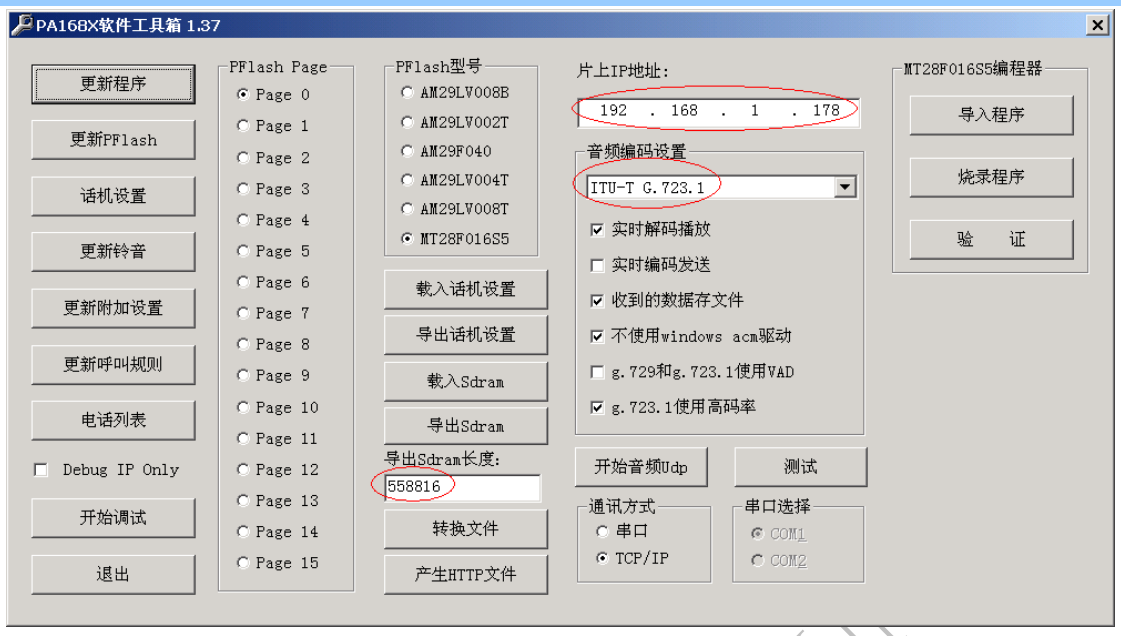

Figure 4-1-1

Second: Click ***Start Debug***, popup ***Udp Debug Output*** window, press use password “1234” in phone’s keypad, then press key “*” until the information “Page0 running” appears in debug window, this means the phone enters into page0 status, as figure 4-1-2.

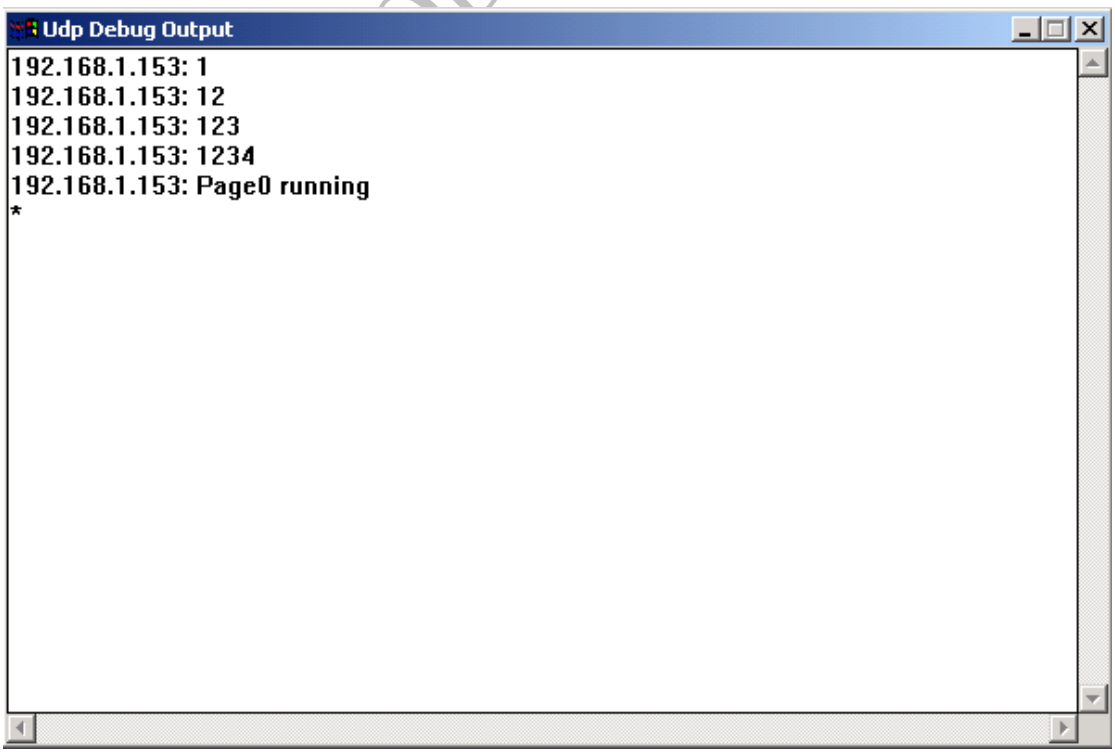

图 4-1-2

Third: Click ***Stop Debug***, close ***Udp Debug Output*** window.

Fourth: Click ***Import SDRAM***, select g723in.dat in popup window and import it into phone.

FiFth: Click ***Start Debug*** after finishing importing data, open ***Udp Debug Output*** window, and enter "#8*9" in turn with phone's keypad, then the chip's DSP start testing G.723.1 encoding and decoding at various frequencies. When **22.2Mhz** appears in ***Udp Debug Output*** window, encoding and decoding finish, as figure 4-1-3、4-1-4.

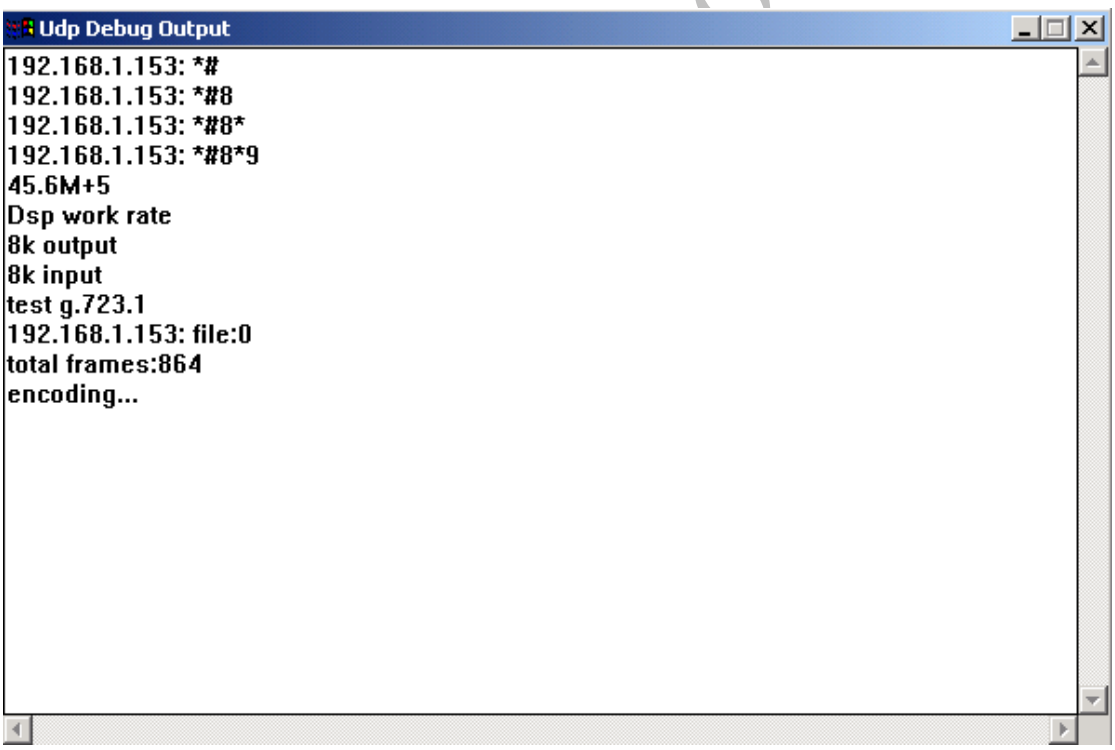

Figure 4-1-3

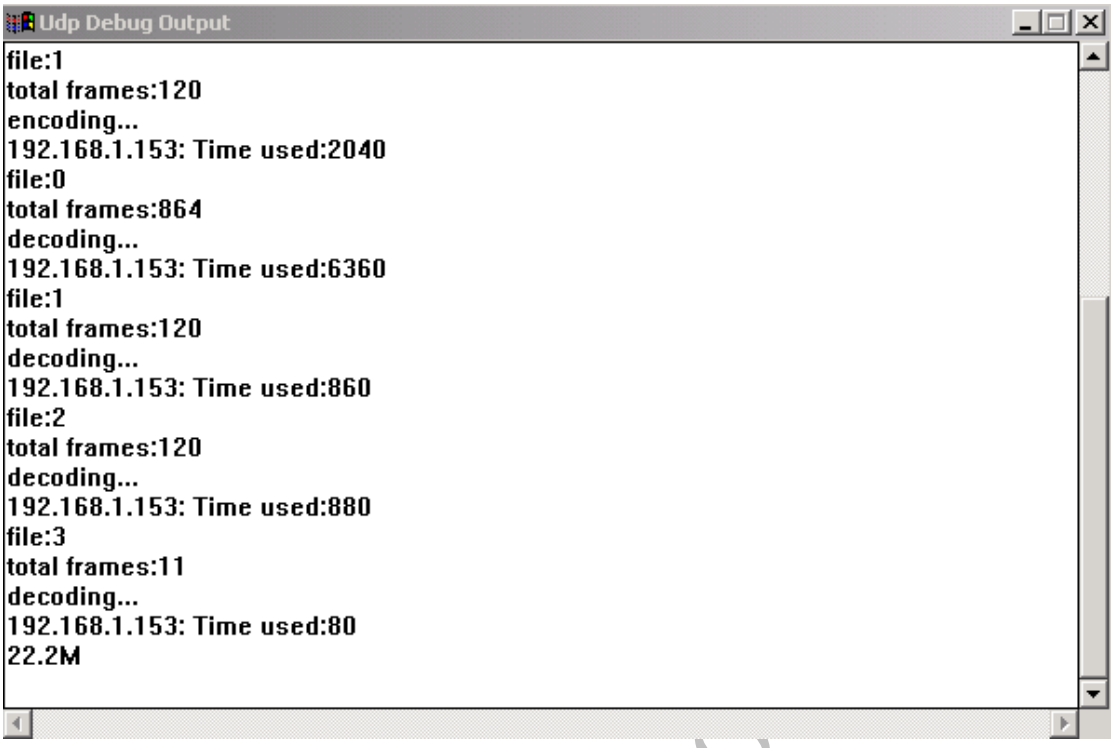

Figure 4-1-4

Sixth: Click ***Stop Debug***, close ***Udp Debug Output*** window.

Seventh: Click ***Export SDRAM***, export the codec data from phone's SDRAM and save as a .dat file, such as g723testout.dat.

Eighth: Run DOS command window, goto the directory where save export file and golden result file, and compare the two file using command FC, like:

C:\ Dsptest>fc g723out.dat g723testout.dat

It means DSP working correctly at this frequency if there is no different, as figure 4-1-5.

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Figure 4-1-5

- G.729 Codec Test

It is same to test G.729's codec with test G.723's codec except next two:

1. First setting operation, you should select *ITU-T G.729 with Annex A&B* in *Audio Encode Setting*, and enter "519092" in *Export DSRAM Length*.

2. Fifth testing operation, you should enter "#8*0" with phone's keypad and start testing G.729 encoding and decoding, there will appear "Test g729" in *Udp Debug Output* window, as figure 4-1-6. Then enter "#8*9", to make the chip's DSP run at different frequencies, and testing G.729 encoding and decoding.

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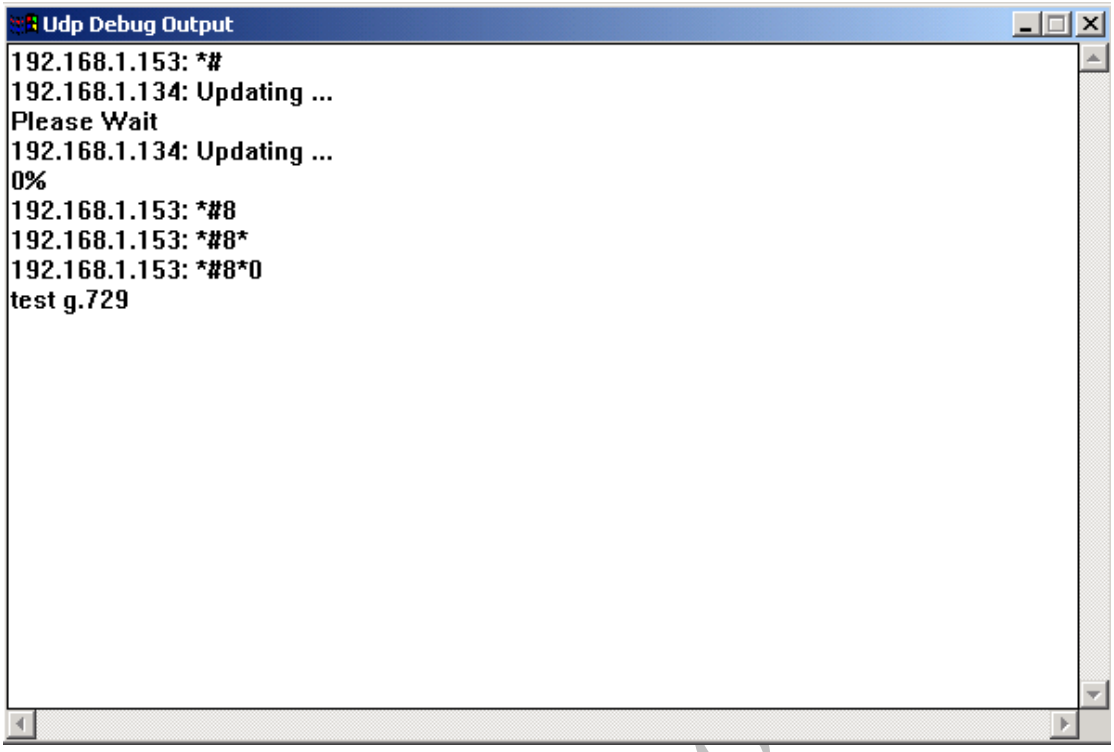

Figure 4-1-6

4.2 Write Digitmap File

This function is updating the call rule of the phone by the update call rule contral. The VOIP procedure's operation is same as the normal phone with the digital call map rule function. As example , you only press key "01082866902" to call a Beijing's phone, and you don't need press key "#" or "Call" key.

The detail operation is:

Step 1: Call Rule File

According the user's need, the call rule is saved in a test file. The length of the mobile's number is 11 bits and the prefixion of the mobile's number is 13 in China, the prefixion of the Chinese phone is 0, so, the rule is 013xxxxxxxx. As Figure4-2-1 is a Digitmap file. The length of the digitmap file can't exeeced 2K.

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Figure 4-2-1

Step 2: Update File

Click the *Update Call Rule button*， open the call rule file(.txt) in the poup window to update the file.

Step 3: Set Parameter

Run PalmTool，Select the *Use Call Map*.

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Five Palmtool Other Functions

We will introduce other functions of Palmtool in this chapter.

5.1 Phone Setting

Enter phone's ip to *IP Address*, click *Phone Setting*, and it will show some config parameters of this phone in pop up window, as figure 5-1-1.

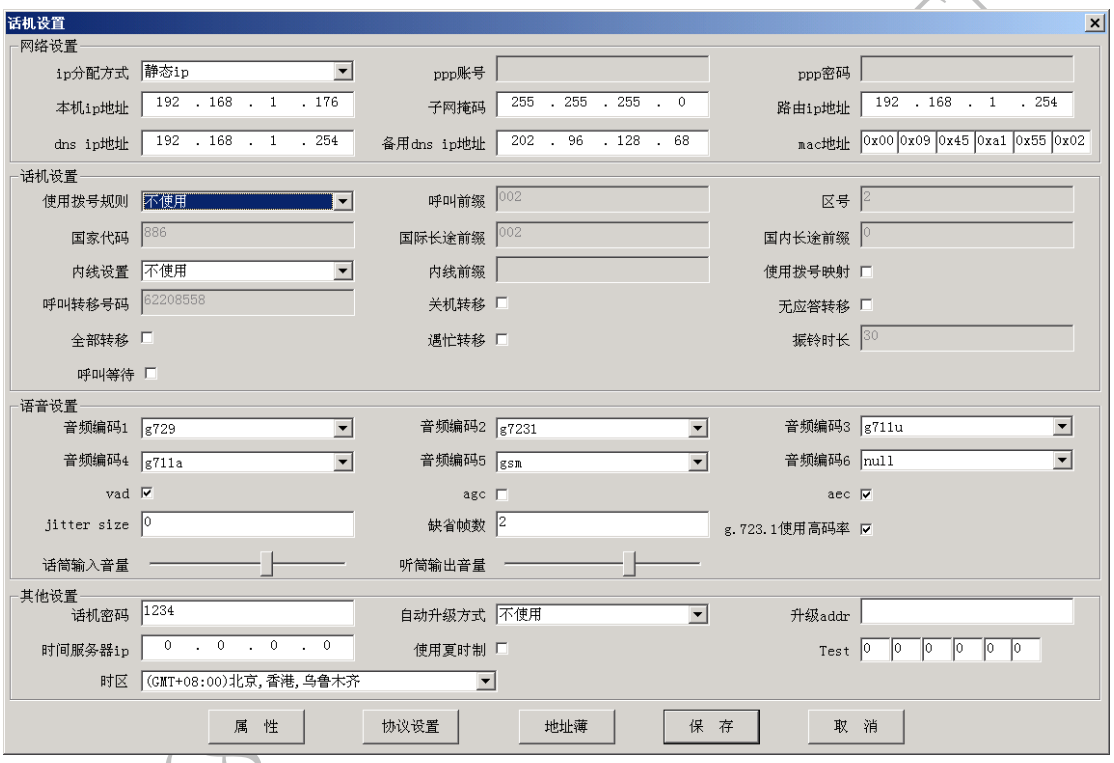

Figure 5-1-1

1. View phone setting

In the window of figure 5-1-1, you can view the phone's network setting, voice setting and other setting. Click *Cancel* for exit.

Note: The detail information of each parameter refers to the phone's user guide.

2. Address Book

You can save 100 phone number and name into address book. It simplifies to dial up when you use address book and fast dial up function.

The address book's window wills popup when you click the ***Address Book*** botton. Double click ***Name*** or ***Phone Number*** to edit.

There are three controls at the bottom of the window:

Save/Return: Save the address book and retrun to ***Phone Setting*** window;

Empty: Empty all data in address book;

Cancel: Donn't save modify and return to ***Phone Setting*** window;

3. Protocol Setting

There are different parameters for different protocols; we support 7 protocols now, viz. H323、SIP、MGCP、Net2Phone、IAX2、WP and EPN.

4. Call setting

Including setting of dial up rules, dial mapping, call transfer, etc.

5. Proterty

There are different parameters for different hardware. And now there are cases as follows:

- Control Useless

The control ***Proterty*** will be gray and cann't been used when the phone is PA168P or PA168Q.

- PA168V Proterty

Gateway PA168V have dual mode function, click ***Proterty***, there are dual mode setting and dual mode prefix in the pop up window.

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- IP Phone Attribute

The parameters that are the same with phone and is inapposite to gateway, such as ring type, volume of hand free output and input.

6. Save Phone Setting

After modify the phone's parameters, you can click ***Save*** to save what you have changed, there will popup and prompt window for clicking ***Yes*** to confirm changing and clicking ***No*** to canceling what have been modified.

The phone will reboot after changing the parameters, then the new parameters become effective.

5.2 Export and Import Phone Setting

Export and Import the phone's parameters. We can simplify the setting of the phone using the two controls.

Processing as follows:

1. Export Phone Setting

Run Palmtool.exe, enter local ip address into ***IP Address***, then click ***Export Phone Setting***, and save the phone setting's parameter as a .txt file, such as settings.txt. The setting.txt includes all setting parameters except TCP/IP's parameters.

2. Import Phone Setting

You can get the setting file after operation 1, and you can import the setting into other phones which need the same setting.

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Processing as follows:

Run Palmtool.ext, enter local ip address into *IP Address*, then click *Import Phone Setting*, select setting file settings.txt, after reboot, the new settings become effective.

5.3 Export and Import Phone Book

Export and Import the phone book. Processing as follows:

1. **Export Phone Book**

Run Palmtool.exe, enter local ip address into *IP Address*, then click *Save PhoneBook*, and save the phone book as a .txt file, such as address.txt.

2. **Import Phone Book**

You can get the phone book file after operation 1, and you can import the file into phone. Processing as follows:

Run Palmtool.ext, enter local ip address into *IP Address*, then click *Load Phonebook*, select the file address.txt, after reboot, the new information become effective.

5.4 Phone List

You can see all phones and gateways in the same sub network after click *Phone List*. The phone list contains: phone ip address, MAC address, phone type and version, how to get ip address, phone number, phone log on status and phone busy status, as figure 5-4-1.

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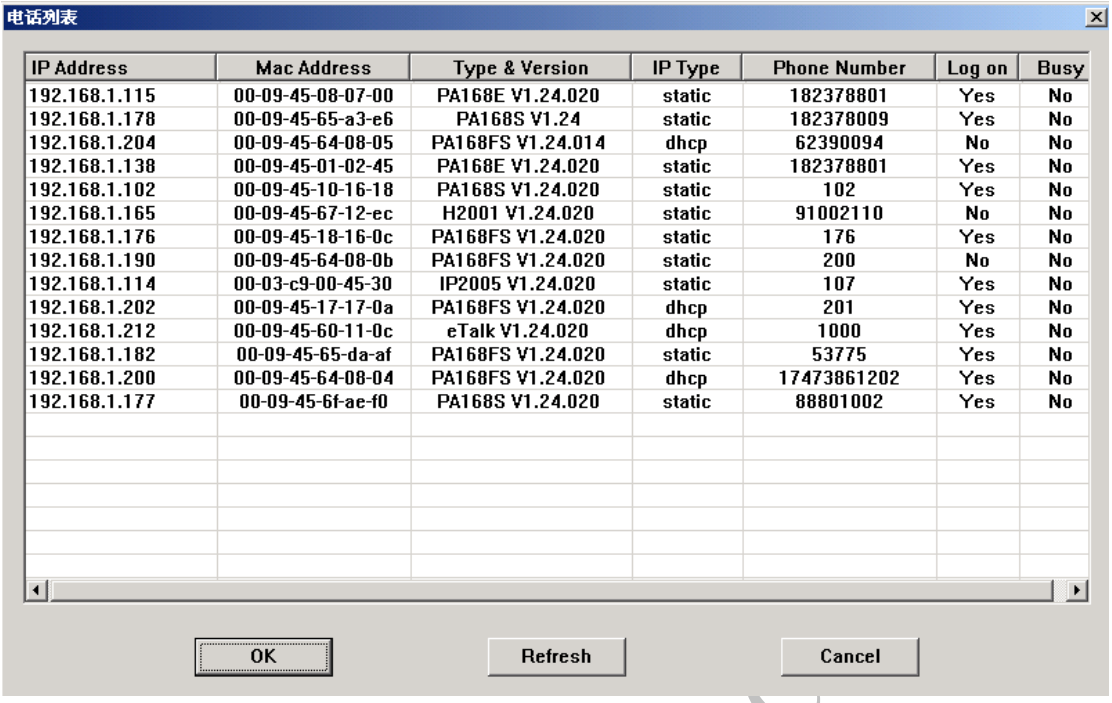

Figure 5-4-1

You can refresh the phones's information by clicking ***Refresh*** botton. Select one of the lists, and click OK, the ip address of this one will be filled into ***Client IP Address*** automatically.

5.5 Transform Files

It will pop up window as figure 5-5-1 when you click ***Transform Files***, each button can transform and merge many kinds of files.

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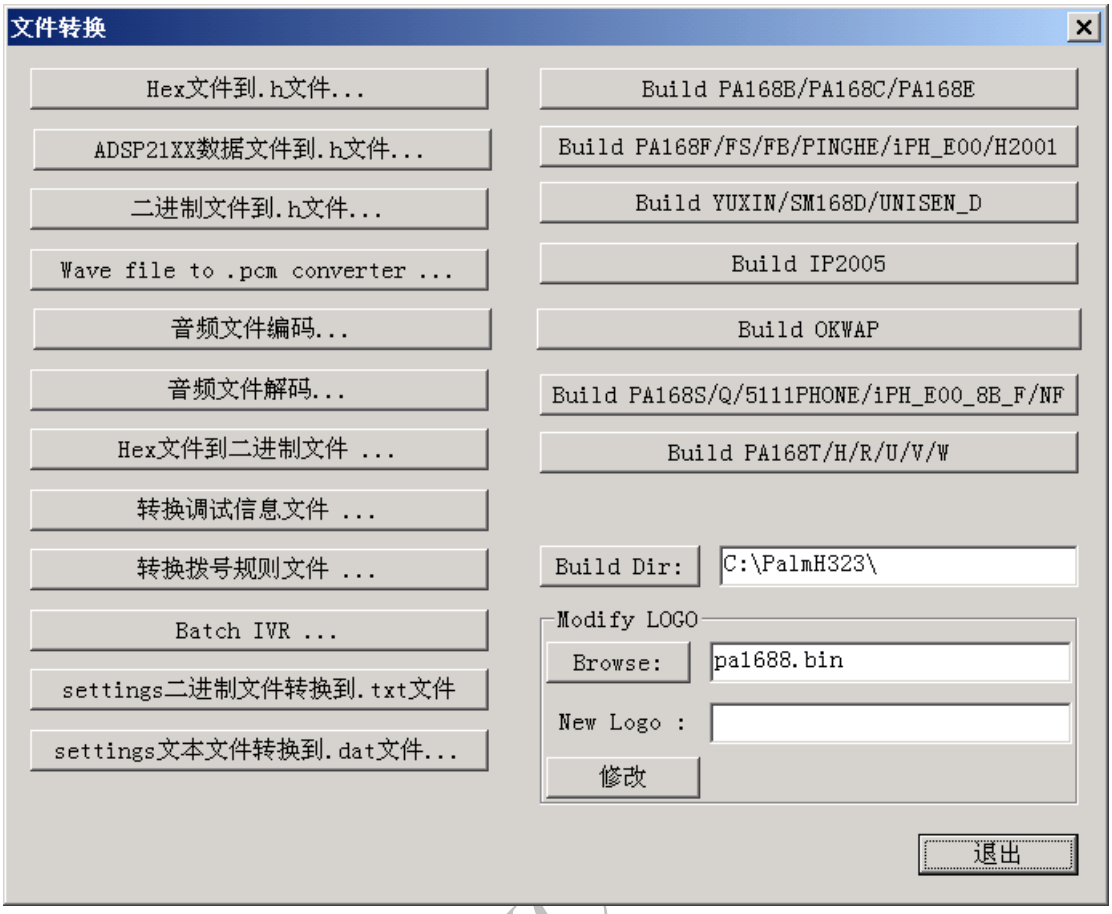

Figure 5-5-1

5.5.1 Transform Other Files

1. **Transform debug information file…**

It transforms the debug information .dat file which has exported from SDRAM during remote debug time to a .txt file.

2. **Transform dial rule file…**

It transforms the dial rule .txt file to .h file, which can be included by the program, and be the default dial rule file. C:/Palmh323/inc/stdmap.h is an .h file which has been transformed. You should not transform the .txt file to .h file when you want to update dial rule file, and use .txt file directly.

3. **Transform setting file to text file…**

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It can transform the setting information file (.dat) which gets from SDRAM to a text file (.txt).

4. Transform setting file to binary file…

此 It can transform a text file (.txt) which includes the setting information to a binary file (.dat), which can be updated into phone's SDRAM.

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Excursus 1 Language List

Language \ Function	ID	WEB	LCD	IVR	Dtmf
Argentina (Spanish)	ar	√(same es)	√(same es)	√(same es)	√
Australia	au	√(same us)	√(same us)	√	√
Belgium (Walloon French)	be_f	√(same fr)	√(same fr)	√(same fr)	√
Belgium (Flemish Dutch)	be_n				√
Bulgaria (English)	bg				√
Brazil (Portuguese)	br	√	√	√	√
Canada (English)	ca_e				√
Canada (French)	ca_f	√(same fr)	√(same fr)	√(same fr)	√
Chile (Spanish)	cl	√(same es)	√(same es)	√(same es)	√
China	cn	√	√	√	√
Czech Republic	cz				√
Germany	de	√	√	√	√
Egypt	eg				√
Spain	es	√	√	√	√
Catalonian (Spain)	es_c	√	√	√	√
France	fr	√	√	√	√
United Kingdom (English)	gb				√
Greece	gr				√
China HongKong	hk			√	√
Hungary	hu				√
India (Hindi)	in				√
Italy	it	√	√	√	√
Japan	jp			√	√
Korea	kr				√
Sri Lanka (Singhalese)	lk			√	√
Mexico	mx				√
Netherlands	nl	√	√	√(same us)	√
Norway	no				√
New Zealand (English)	nz_e			√(same au)	√
New Zealand (Maori)	nz_m				√
Poland	pl	√	√	√	√
Portugal	pt	√	√	√	√
Russia	ru				√
Singapore	sg				√
Slovakia	sk			√	√
China Taiwan	tw				√
United States	us	√	√	√	√
South Africa (English)	za_e				√
South Africa (Dutch)	za_n				√

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